

## RECORDS OF ROTIFERS EPIZOIC ON CLADOCERANS FROM SOUTH AUSTRALIA

In a review of the rotifer genus *Brachionus* (Rotifera: Monogononta), it was noted that some species typically were collected as epizootes on planktonic crustaceans<sup>1</sup>. For example, *Brachionus rubens* and less commonly *B. variabilis* occurred on *Daphnia* and *Ceriodaphnia* species. *Brachionus charini* was reported from eastern Europe as a commensal in the branchial chamber of *Coenestheria davidi*, a phyllopod<sup>2</sup>. *B. sessilis* was recorded as an epizote of *Diaphanosoma brachyurum*, and the known hosts of *B. rubens* and *B. variabilis* were listed as *Daphnia magna*, *D. pulex*, *D. longispina*, *Moina rectirostris*, *Ceriodaphnia* sp., *Polyphemus pediculus* and several macroinvertebrates<sup>3</sup>.

Although *B. rubens*, *B. sessilis* and *B. variabilis* are known from Australian waters<sup>4</sup>, all were collected free-swimming from the open water of hillabongs (Magela Ck, N.T., and Murray-Darling River system, Vic., N.S.W.). Significantly, the host species listed by Koste<sup>3</sup> do not occur here<sup>5</sup>. We document here the first record of a facultatively epizotic brachionid from Australia, and add to both the known epizotic taxa and their "host" species.



Fig. 1. LP SEM view ( $1.01 \times 10^2 \times$ ) of *B. novaezealandiae* epizotic on the head (dorsal) of *Pseudomoina lemnae*. *Staurastrum* (alga) and attached ciliate protozoans also can be seen.

In a collection for phytoplankton taken from a farm dam at Hahndorf, S. Aust. (27.vii.83) a rich population of planktonic cladocerans hosted a population of brachionids. The predominant cladoceran was *Pseudomoina lemnae*, with *Daphnia carinata* s.l. and *Ceriodaphnia* sp. also abundant. Most larger individuals carried from 5–40 female rotifers attached by sticky foot-

gland secretions to the hosts' carapace; most of the rotifers were ovigerous, with 1–2 large amictic (parthenogenetic) eggs.

Some animals with attached rotifers were preserved in 4% formalin and prepared for light- and scanning electron microscopy (SEM)<sup>6</sup>. Representative SEM micrographs are shown in Figs 1 and 2. The rotifers have contracted into their loricas in response to the preservative, and some distortion of the lorica is evident, a result of the desiccation process for SEM. However, the taxonomically significant ventral margin is clear on the micrographs. The caudal lorica margin and foot-opening were examined in PVA-mounted preparations. The elongated anteromedian spines and absence of a flap over the foot-opening distinguish the specimens as *Brachionus novaezealandiae* (Morris), which, despite its name, is widely distributed in sodium-dominated waters in the southern hemisphere and may be cosmopolitan in this biotope<sup>7</sup>.

*B. novaezealandiae* is not listed as epizotic by Koste<sup>3</sup>, however Morris' original description (= *B. variabilis* var. *novaezealandiae*) notes that his material came from a pond at Totara, N.Z. "where they were in numbers, parasitic on *Daphnia thomsoni*"<sup>8</sup>. The type slide was found in the collection of the British Museum (Natural History), and although the coverslip was broken and the specimen somewhat desiccated and distorted through loss of mountant, it was identifiable clearly as the specimen from which Morris' figure was drawn. The slide is labelled "Proposed sp. nov. *Brachionus novae-zealandiae* C. B. Morris 1917.1.1 (all Parasitic on *Daphnia*) Totara, N. Otago. Formalin 25.10.11". Comparison of the South



Fig. 2. Anterior view ( $1.86 \times 10^2 \times$ ) of two *B. novaezealandiae*, same host. Animals are contracted. Single parthenogenetic eggs carried. Scalar 100  $\mu$ m.

Australian epizoic form and the type material indicates that the pronounced caudal spines are reduced in the S. Aust. specimens, but are within the range of variability of this species reported from R. Murray *B. novaezealandiae*<sup>9</sup>.

Undoubtedly rotifer-cladoceran associations will be found to be more widespread among the Australian Rotifera with further study. A diverse assemblage of phytoplankton and protozoans, some of which can be seen

in Figs 1 and 2, also occurred on the three cladoceran genera examined. Such epizoite communities are virtually unstudied in Australian inland waters.

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<sup>1</sup>Ahlstrom, E. H. (1940) Bull. Am. Mus. Nat. Hist. 77, 143-184.

<sup>2</sup>Kutikova, L. A., Kosova, A. A. & Khodorevsky, O. A. (1976) Zool. Zh. 55, 763-767. [Russian].

<sup>3</sup>Koste, W. (1978) Rotatoria. Die Rädertiere Mitteleuropas (Überordnung Monogononta). 2 vol. revision of M. Voigt (1956). (Gebr. Borntraeger: Stuttgart).

<sup>4</sup>Shiel, R. J. (1983) Proc. R. Soc. Vict. 95, 33-37.

<sup>5</sup>Smirnov, N. N. & Timms, B. V. (1983) Rec. Aust. Mus. Suppl. 1, 1-132.

<sup>6</sup>Koste, W. & Shiel, R. J. (in press) Aust. J. Mar. Freshwater Res.

<sup>7</sup>Pejler, B. (1977) Arch. Hydrobiol. Suppl. 53, 255-306.

<sup>8</sup>Morris, C. B. (1913) Trans. Proc. N.Z. Inst. 45, 163-167.

<sup>9</sup>Koste, W. (1979) Aust. J. Mar. Freshwater Res. 30, 237-253.

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